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ABSTRACT

This document, which is designed for classroom teachers at all levels, examines the various electronic communications technologies available today and describes teaching methods and classroom techniques that teachers of business communication and other business education courses can use to introduce students to those technologies. Presented first are a brief introduction to available electronic communication technologies and their relevance to business students and a framework for organizing and selecting the best electronic communication tools for given tasks/settings. Next, available electronic communication tools are grouped as follows (based on the communications settings in which they have been deemed most appropriate): same time/same place tools (electronic meeting systems and presentation tools); same time/different place tools (online conferencing/chat, whiteboard conferencing, and videoconferencing); different time/same place tools (work group computing, word processing/electronic document publishing, bulletin board systems/Usenet newsgroups, and kiosks); and different time/different place tools (electronic mail/listservs and hypermedia/multimedia). After a description of the characteristics, applications, and benefits of each electronic communication tool, ideas for using the tool in business communication and other business classrooms are suggested. Concluding the document are a brief look at the future of electronic communication, glossary, and 38 references. (MN)

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TEACHING ELECTRONIC COMMUNICATION: TECHNOLOGY FOR THE DIGITAL AGE

Marie E. Flatley

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**TEACHING ELECTRONIC
COMMUNICATION: TECHNOLOGY
FOR THE DIGITAL AGE**

Marie E. Flatley

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Teaching Electronic Communication is an exciting new area for business education teachers. Technology is changing rapidly, and teachers must keep abreast of the trends and incorporate new ideas into their classrooms. During the preparation of this monograph, the following persons made significant contributions to the final product: Denise Konefes spent many hours researching current trends and technology; Nancy Dietz utilized her editing skills on the drafts; and finally, Leonard J. Deftos, my husband, whose continued support and encouragement helped me through this project.

Marie E. Flatley

TEACHING ELECTRONIC COMMUNICATION: TECHNOLOGY FOR THE DIGITAL AGE

INTRODUCTION

Change. Some changes we greet with skepticism or resistance. Others we embrace wholeheartedly. Whatever our attitude toward the technological advances facing today's businesses, these changes cannot be ignored. Preparing students for tomorrow's workplace demands that business educators teach up-to-date content as well as help their students develop lifelong learning skills to keep pace with change. But the rapid rate of technological change presents both business people and business educators with a major challenge, a challenge of both knowing about new developments and knowing how to use them appropriately.

One affected area extremely important to all kinds and aspects of business is communication. Technology influences the way business communicates internally and externally. The primary technological change in communication is that documents are being created, transmitted, and stored in digital form. A secondary change is that technology enables us to move these digits faster and faster. When individuals bought a 28,800-baud modem, they probably thought this was the last modem they would need for a long time since this is the maximum speed the traditional analog telephone line can handle. But soon this will change. People will be moving digits across even faster copper lines; AT&T and Paradyne have announced a compression system that will transmit 70 times faster than existing modems, enough speed to permit two-way television transmission. And choices will exist—copper, fiber optic, or microwaves.

Both the digital form of communication and the enhanced speed of transmission will probably change the nature of our messages. In fact, the electronic medium used may transform both the message and what is done with it (Willis, 1995).

Although the content of the message is still the most vital component of the communication process, today's business people need to consider many new ways to compose, transmit, and distribute their messages to improve quantity and quality. Electronic communication can be transmitted faster and cheaper than paper. It also allows a sender to use colors, graphics, and sound in documents. And like it or not, the medium one uses, like the clothes one wears, conveys a message to its receiver. Therefore, learning about these tools and how to use them appropriately should be an integral part of most business communication courses as well as integrated in other business education courses.

Because these developments are occurring so rapidly, it may sometimes seem like a hopeless effort to keep abreast of the changes. The time and effort one

spends to learn a new technology often seems like a poor investment. However, the train isn't moving too fast; one can still catch it. And by creating a basic framework for organizing these tools, one can continue to easily keep abreast of new tools as they are developed for electronic communication.

A Framework for Organizing and Choosing Tools

With a framework, one can organize the multiplicity of current and future technological tools. A framework can also help one choose the appropriate tool for the communication task at hand. This framework is simply a time and place matrix; it fits both the traditional ways business has communicated as well as ways in the digital age of communication.

In Figure 1, one can see some of today's tools for electronic communication organized according to this simple yet effective time and place framework. The time and place matrix refers to the relationship between the sender and receiver of the communication. For example, same time/same place communication means the sender and the receiver are face-to-face. To communicate electronically in a face-to-face format, they might use electronic meeting software for written communication or presentation software for an oral presentation.

For simplicity, tools have been only placed in the category where they have the most appropriate application. However, some people with only a few tools at hand often find innovative ways to use them.

Figure 1—A Framework for Electronic Communication Tools

		Time	
		Same	Different
Place	Same	Electronic Meeting Systems Presentation Tools	Workgroup Computing Word Processing/ Documnet Sharing Electronic Document Publishing BBSs/Usenet Groups Kiosks
	Different	Videoconferencing Online conferencing (chat) Whiteboard conferencing	E-mial/Listservs Hypermedia Multimedia

Scope

The objective here is to present technological tools used in several aspects of the communication process and suggest ways one might implement them most effectively in the classroom. These tools include those used to gather input, process data, and distribute messages electronically. These are tools that empower communicators, enhance or improve the quality of their communication, and increase their productivity. A knowledge of the breadth and appropriate application of these tools is vital in today's changing businesses.

Same Time/Same Place Tools

The electronic communication tools that fit this cell in the time/place matrix are those one would use in face-to-face communication, communication where an individual is in the same place at the same time as the receiver of your communication. These tools can be used to enhance written or oral communication—tools such as electronic meeting system programs and presentation programs.

Electronic Meeting Systems Overview

Electronic meeting systems (EMS) software consists of a toolbox of features designed to enhance the meeting process. It runs on a network to allow many users to work together simultaneously. The tools in the toolbox can be classified into four broad categories: idea generation, idea organization, prioritization, and policy development (Chen, et al., 1994).

Idea Generation Tools. These are probably the most widely used. They let users brainstorm, add comments, and develop outlines. Meeting participants simultaneously enter ideas into the system, and the system displays their ideas to others. Most systems allow participants anonymity through the software design or through the use of pseudonyms. Unlike a traditional meeting where participants take turns and the meeting can be dominated by a single participant or a small group, EMS programs give everyone a chance to present ideas. Also, the software focuses the discussion on the ideas, not the persons presenting them.

Idea Organization Tools. These help sort ideas and allow groups to analyze and organize ideas into useful classifications. They usually require the skillful guidance of a group facilitator, especially when participants generate long lists of ideas or when participants come from diverse backgrounds using unique jargon.

Prioritization Tools. These allow meeting participants to vote on issues, evaluate and rank alternative solutions, answer and evaluate questionnaires, and complete matrixes. These tools help in meetings where decisions need to be reached. They help groups allocate funds, select from various alternatives available to solve a particular problem, and plan actions.

Policy Development Tools. These let groups create policies and identify particular stakeholders in policy decisions. They help groups produce policies that work effectively and whose impacts are understood before they are implemented.

EMS tools have clearly been shown to enhance the meeting process. Participants report getting more done in less time and express confidence in the outcome of the meetings. Some believe the software forces users to be more prepared for the meeting and to stay focused. Many also believe creativity is enhanced by looking at a wider range of ideas. Furthermore, the system keeps a full record of the meeting inputs and can generate outputs at various stages. The result is that EMS tools enhance the efficiency and productivity of meetings (Kranz & Sessa, 1994).

A recent study looked at the use of EMS to support curriculum development. The research found that the results produced were high in both quantity and quality. Also users reported high satisfaction and a desire to use the tool in the future (O'Connor & Bronner, 1995).

Not only has EMS software revolutionized many business meetings, but also it has also been used effectively in the classroom. One research study in a business communication class reported on the use of an idea organization tool, Groupwriter. The study compared the writing quality of groups using and not using the tool. Student groups using the Groupwriter tool produced significantly higher-quality policy and procedures documents than student groups without the tool (Easton, et al., 1994).

Another article reported on the use of Daedalus Integrated Writing Environment in world literature and modern poetry classes. The instructor posed a question or proposition, asking students to comment both on the original question and on other students' responses. He reported on the need to carefully choose questions, stating that in a 50-minute class period he usually asked only one to four questions. He suggested that control of the discussion is limited, so very careful attention to the question wording is important.

Because students use pseudonyms with this software, it is possible that they could use offensive language often called flaming. However, this instructor found that the one time this happened other students corrected the behavior by calling it silly or juvenile. The instructor can always enter the discussion, either under a real name or under a pseudonym. This instructor believes that this technology can be adapted to any course in which the teacher wants students to learn from each other through the interplay of ideas (Craven, 1994).

Ideas for Using Electronic Meeting Systems in the Classroom

While business communication courses appear to be the most logical place for including this technology, it can also be integrated easily and effectively into other business education courses.

Business Communication Courses

Whether it is called group, team, or collaborative writing, working together on short and long writing projects is becoming a clear part of U.S. business practices. Many schools are already assigning group writing projects for analytical reports, proposals, and policy and procedures statements. To introduce students to the use of EMS software for creating these documents, the brainstorming tool is often the best place to start. While students can be told research shows that using the tools produces higher-quality results, the brainstorming tool shows them just how quickly and easily results can be accomplished. One way to introduce the software is to simulate creating a class home page for the web. Students can usually generate a good list of what to include in a very short time. This list can then be analyzed and organized into sections (often called folders); these sections can be used with the group writing tool. Most students should feel comfortable with the software in one or two sessions.

Closely related to collaborative writing assignments are team presentations. Encourage your students to use this technology to define the purpose, generate items the team should cover, organize the items, and create an outline. By working together on the planning, they will often develop examples that provide continuity throughout the team's presentation. Student teams that use the EMS software for planning will generally appear much more cohesive. And often they'll report it took much less time than they anticipated.

EMS software can also be used to enhance instruction. For example, if a teacher wants students to participate more in choosing topics they write about, they can use the brainstorming tool to help generate report topics. To illustrate different ways to organize information with the students taking a more active role, present data and ask them to organize it with the EMS tools in direct, indirect, and chronological designs. With the appropriate data, students could be asked to organize it by subject, by acronym or alliteration, by importance, by cause-effect/effect-cause, by comparison and contrast, and by spatial or geographic divisions.

The technology could be used to teach data interpretation. The teacher can present data with or without interpretation (depending on the critical thinking skills of students), asking them to critique the teacher's interpretations or brainstorm and write their interpretations with the Groupwriter tool. Using the EMS tools both separately and together can reinforce the concepts they read about in their text with actual hands-on experience before writing for a grade.

Other Business Education Courses

EMS tools can also be used effectively in other business education classes. They enable all students to participate and gives them the added security of anonymity. Keyboarding classes could use these tools at the point where the

teacher wants to develop students' skills to use their keyboarding for composing. Presenting a "hot" issue that students enjoy talking about encourages them to use their keying and thinking skills simultaneously. In discussions of internal control, accounting students could use these tools for similar reasons. They could also use them to draft documents to clients. Depending on the skills of the students, they could develop a newsletter for clients that updates them on various IRS rulings. Or they could simply generate ideas, organize, and draft a letter on a single ruling such as the home office deduction.

Computer applications classes could use EMS for preliminary discussion of netiquette as well as capstone discussions on topics such as software security or company policies for hardware upgrades. And there are a whole host of topics that would be appropriate for introductory business and economics courses in categories such as community, political, consumer issues, etc. These courses could also use some of the EMS evaluation tools for case problems, including allocating funds for budgets. EMS technology allows the students to participate fully in applying concepts, developing their critical thinking skills as well as adding to their knowledge of the subject material.

Presentation Tools

Presentation software is generally used to create and display visuals to complement oral presentations in same time/same place communication (Graves, 1995). Initially, speakers used desktop products such as Harvard Graphics, Freelance, PowerPoint, Persuasion, and Presentations to create transparencies for overhead projection to use with their oral presentations. However, improvements in the software along with price drops and new developments in hardware have increased the use of computer projection. New products and upgraded software now allow speakers to use features such as color, graphics, sound, animations, and even video in presentations.

As new desktop products such as Action, Astound, Corel Draw, and Compel bring easy use of these features, these features and others are being added to traditional products, giving them more depth. Additionally, new presentation add-on tools are entering the market. One of these is Harvard Spotlight, which enhances the skills of the presenter using visuals prepared with any of a host of presentation programs. Spotlight gives the presenter more control over the presentation. It lets the speaker keep track of the timing of the presentation, view the slide notes on the screen, blank the screen and skip around the slide set if desired (Anonymous, "Quick," 1995). Another add-on presentation tool is Medisoft's Presentation Partner. Like Harvard Spotlight, it works with a host of desktop presentation programs. As a utility program comprised of a collection of ShowScripts, it contains music, animation, transition effects, graphics, and placeholders for text and video clips. It also contains tools for editing and recording sound files as well as having a collection of clip media (Harrel, 1995).

Yet another tool being used for presentations is the web browser. The browser is particularly suited to multimedia presentations where helper applications are included for such tasks as listening to sound clips and viewing 3-D files and video clips. Furthermore, it is particularly suitable for those wishing to talk about the Internet (Valauskas, 1995).

Research shows that using visuals has several benefits, including improved retention, clarity, and interest. Furthermore, speakers using visuals are viewed as more credible than those without visuals. And in some cases, using visuals makes an impact words alone can't. One study compared the effect of presentation software in a large lecture course on achievement of students with different learning styles and found no difference. However, the students reported greater interest in the course (Pearson et al., 1994).

Ideas for Using Presentation Tools in the Classroom

Presentation tools such as the traditional graphics programs as well as multimedia, hypermedia, and web browsers can easily be integrated into both business communication and business education courses.

Business Communication

Obviously, presentation software is ideal for both the teacher-centered and student-centered aspects of a course. Teachers can use it to support their lectures. For example, in a business communication class where one is discussing document layout and design, presentation software can be used to show the effects of changes in typeface. A teacher can show how different typefaces communicate different messages as well as the impact of size and style. Showing typefaces that "shout" and those that "whisper" is much easier than describing them. Additionally, the teacher can illustrate the emphasis of different placements of graphics on a page.

Presentation tools can also be used in individual and group projects. Individuals could use them in informative talks to clearly show the name of a speaker, in a welcome to introduce a theme of a particular meeting or session, or in a progress report to highlight tasks completed or timelines. Individuals could use these tools in persuasive talks to present a proposal or to sell a product or service.

Business Education

Teachers in all business education subjects can use presentation software to support their lectures. In business math, teachers could use it to create interest in dull topics such as interest computation by creating interactive lectures with

animation and color. In a keyboarding class, illustrations of various keyboards could be used in discussing the differences among keyboards. Economics teachers could use it to help clarify complex processes or data interpretation from charts. And teachers in all subjects can use the color and animation features to emphasize key concepts.

In nearly all business education courses, students can be assigned tasks where they can use the software as they might use it in a business. In accounting, students might use it to supplement a presentation they would give a client or to create a screen show they might send to numerous clients that would help the clients gather appropriate information for their tax returns. In computer application courses, presentation software could be integrated in the class through lessons on exporting and importing data among the basic word processing, spreadsheet, and database applications and the presentation program. Economics students could use the software to explain how they reasoned answers to particular problems from graphs. They could also use the software to show how to interpret various charts. Introduction to Business students could use it in their reports on selected topics, in student-led discussions, and to introduce classroom speakers.

Same Time/Different Place

The electronic communication tools that fit this cell of the time/place matrix are those one would use to communicate with someone at the same time but in a different place. While the telephone is a perfect fit for this category, the discussion here will be confined to more sophisticated technologies such as online, whiteboard, and videoconferencing tools. However, while these tools will be discussed separately, the technologies are taking on similar characteristics in much the same way desktop publishing and word processing software have moved toward each other.

Online Conferencing/Chat

Online conferencing using chat technology involves communicating with someone in real time but in a different place. It can be used across local area networks as well as across the Internet. In fact, it has been used for many years on mainframes, but more recently on the Internet using Internet Relay Chat (IRC) and very recently on the Web using WebChat. WebChat is used with web browsers. It allows users to enter active links in messages as well as exchange visual and audio files.

Several readily available types of help on using chat can be found. A friendlier form of chat is the Undernet IRC. It allows people to ease into the use of chat. Numerous UseNet groups for help can be found by searching alt.irc*.

And by using web and gopher search tools, one can find additional information, including information on the undernet IRC.

Chatting online can provide both professional and personal benefits. Teachers and students can discuss class-related topics. Also, online chatting gives both teachers and students the opportunity to learn from others with different perspectives. Serious chats in discussion groups for the Northridge Earthquake, the Persian Gulf War, and even the Russian Revolution helped people in life-threatening positions. Online chatting can also help people solve professional or work-related problems. On the personal side, it can be used to join hobby-related discussion groups. From these benefits, it is clear that integrating online chatting into the classroom can enhance students' learning experiences.

Ideas for Using Online Conferencing/Chat in the Classroom

Before students join active online chatting groups, they should learn the etiquette expected and should practice on friendly channels. The basic etiquette is similar to e-mail etiquette. However, unique to chatting are the concepts for flooding and flashing. If one types something over and over again, that's considered flooding. Some channels will even kick individuals off the system for flooding by including pre-loaded ASCII graphics, even nice graphics like roses or sailboats. A flash is similar in that it is a program that forces compiling, causing delays in the system. While some participants of online groups protect against flashes by preventing compilings, most do not. Online participants can be annoyed by both these irritants. Practicing on friendly channels is definitely advisable before trying out unknown channels. The Undernet offers a friendly environment as well as do some other channels such as #jeopardy and #Davis.

Most schools have access to online conferencing technology. Private providers such as Prodigy, CompuServe, America Online, and Microsoft Network offer both Internet access and chat rooms. Integrating online conferencing in business communication and other business education classes requires little more than planning for it.

Business Communication

Several topics in the business communication course easily lend themselves to real-time, online conferencing. One is persuasive communication. Let students choose a product or service they would like to promote online. It could be from a company aligned with the school that would give permission to promote its product or service. Often local small businesses or startups are extremely willing to participate. It could also be a product or service from a school organization. Ask students to practice for a week or so before the actual conference. Also, ask

them to suggest discussion groups, groups that are appropriate for the discussion and groups that are active. Identify and plan the points to make in the online session, including anticipating possible questions and their answers. With the preparation complete, conduct the online chat session with one or two students chatting and their screens projected for all to see. One experienced educator recommends that instructors should be ready to contact others to join the conference if not enough participants are active as well as be ready if necessary to participate in the conference. This user also suggested having a globe ready so the rest of the class gets a "visual feel" for the distance covered (Carlitz, 1993).

Another appropriate use of real-time, online chatting is to present information. Teachers could use it for conferences with students, reviewing material and answering questions just as businesses use it for real-time customer support. Businesses also use it for training when they have interactive sessions with those working remotely. Teachers could also assign students to write a press release and answer questions during an online chat session.

Choose a topic that might interest local news people, personally invite local radio, newspaper, and television news people to your chat session, and send e-mail announcements to interested others. These might be alumni, national news people, politicians, and any other stakeholders that can be identified. Finally, real-time online chatting could be used to interview an expert on a topic that interests both teachers and students.

And, of course, there are other uses of chat. Teachers could encourage student groups to use chat to conduct planning sessions for their group reports. They could also use it to chat with those from other cultures when studying about how to communicate cross-culturally. While the majority of discussions are in English, groups are conducted in a wide variety of other languages.

Other Business Education Courses

Real-time, online chatting can also be introduced easily into other business education courses. In an accounting class, the teacher could invite tax experts or IRS agents to discuss tax issues with your students. Recent graduates and those with over five years of accounting experience could be invited to discuss accounting careers. Students can be encouraged to join online groups to find solutions to questions about software that textbooks or the manuals do not answer. Online chatting is a popular place to discuss new computer technologies in both the hardware and software arenas. And teachers could arrange to bring computer experts to the classroom via an online chat session.

Introduction to business, economics, and keyboarding classes also lend themselves to conducting discussions online. In introduction to business classes, ethical issues are excellent for generating chatting. Topics such as global marketing and global banking are good ones, especially if the chat can be

announced ahead of time to attract participants with various views. Also, bringing local business experts into the classroom on a regular basis via scheduled online chat topics will help students learn from them as well as encourage students to be prepared to say something "intelligent." Some good discussion topics for economics classes are online discussions of the economic implications of pending congressional legislation and the economic impact of political platform proposals. Local and state representatives may be willing to join these groups. Keyboarding classes, too, have some topics that online chat sessions would enhance. Students could chat with others keying on the Dvorak keyboard as well as discuss the features of new keyboards. They could also hold chats on the value of keying skills with groups who key and those who do not.

Whiteboard Conferencing

Whiteboard conferencing software connects multiple users across networks or modems for application and document sharing. Most software in this category contains a chatbox feature, allowing users to communicate in real time. However, many programs in this category work with special modems that will carry voice and data on one line. This software uses multiple windows to show and share documents. Most programs in this category can send screen shows to multiple audiences as well as keep some documents in private workspace.

Two add-on products have enhanced the visibility of this emerging technology—a porcelain whiteboard and two-way voice/data modems. Microfield Graphics' SoftBoard is a large porcelain whiteboard whose markings and colors can be transferred in real time. And the real-time sessions can be captured for playback later, allowing those unavailable at the time the meeting occurred to view it. Along a different line is a modem technology that allows the simultaneous transfer of voice and data. Two companies, Radish Communications and AT&T's Paradyne, market these modems. Additionally, Radish has licensed its technology to several big modem companies. These modems work so transparently that they have been said to be as easy to use as a speakerphone (Eglowstein, 1994).

Whiteboard software has two particularly useful features. First, it allows the telecommuter or mobile worker to check documents with a central office. Second, its interactive capabilities, especially the question-and-answer features of some programs, whether written or oral, help clarify communication. It clearly has a place in any environment where people work in different places.

Ideas for Using Whiteboard Conferencing in the Classroom

Because whiteboard conferencing is focused on application and document sharing, its use in both business communication and other business education classes should be focused on those tasks using specific applications.

Business Communication

Many programs support the communication process; these programs and the files they generate can be shared using whiteboard conferencing software. Idea generation software, such as Inspiration, can be used for the planning process to identify the tasks that need to be done as well as to brainstorm the components of a letter, a proposal, a press release, a long report, or any other document where another's input is critical. Also critical to the planning process is scheduling. Personal information managers, such as Organizer, Sidekick, and ScheduleIt, can be used to allocate times for various tasks that need to be completed.

Another useful step in the writing process where another's input is valuable because a fresh perspective helps one formulate new ideas, is analyzing and interpreting data. Users can view and interpret together results generated by statistics programs or the charts. While whiteboard conferencing can be used for writing, it is particularly helpful for the revising and editing steps in the writing process. Once students have used whiteboard conferencing software in the classroom or across modems, they will want to use it for sharing a variety of applications. The software keeps them focused on the task at hand and allows them to produce a higher-quality result.

Other Business Education Courses

To use whiteboard conferencing programs effectively, students need to be familiar with the application software. Then, by carefully selecting a task directly related to the concepts being discussed in class, the teacher can reinforce those concepts rather than focusing on the tool. For example, accounting students can use the word processing software to create a letter to send to clients interpreting new IRS rulings. They can use desktop publishing software to lay out a newsletter for clients, or they can use it to create a chart to include in the newsletter.

A task for computer applications students might involve using more advanced features of the basic applications. They might use them to build a template for a sales report to be used by all field sales representatives. Or they might use them to design a database of reference sources to support employees. Marketing students might use whiteboard conferencing programs to write sales letters and brochures as well as letters announcing new services, and other important documents that are sent out in quantity. Economics students might use graphic software together to learn and understand different economic principles. Or they might use an idea generator to explain the meaning of a set of economic indicators. Whiteboard conferencing software is a productivity tool, enabling the synergy of working together.

Videoconferencing

At the 1964 World's Fair in New York, AT&T introduced the picture telephone. People all over the world expected in a short time to be talking to and viewing family, friends, and business associates. But it has taken this technology nearly 30 years to begin to enter our lives. For several years we have had satellite downlinks held simultaneously at geographically dispersed sites. But the technology discussed here is compressed digital videoconferencing that provides two-way, interactive video and audio in real time over digital phone lines (Galbreath, 1995). Specifically, it is desktop videoconferencing that is quickly making its way into today's businesses.

Businesses are embracing this technology because of the tangible and intangible benefits. The most obvious tangible benefits are the money and time saved by eliminating travel expenses. Savings from these direct costs alone often justify the costs to set up or use videoconferencing technology. In addition, intangible benefits can easily justify investing in the technology. One is the effectiveness of the meetings. Those who have participated in meetings using videoconferencing systems report experiencing well-planned, on-track sessions. Additionally, morale of users seems improved, especially those at remote sites for whom this technology affords a presence and recognition. Furthermore, this technology has the potential to keep professional contacts intact (Desmond, 1995).

However, desktop videoconferencing is not without disadvantages. At this time, most users report it is not easy to set up. In fact, one user reported thoughts of abandoning videoconferencing because of difficulties coordinating the project through his local phone company, his long distance carrier, and the vendor (Ross, 1995). Another disadvantage is the poor quality and often small size of the video, often blamed on the transmission lag of the technology at this time. At present the technology does not have any industry-wide standards, creating problems with connecting devices and file sharing.

While this technology is still in its infancy, advancements are rapidly being made. Today's most reliable desktop videoconferencing systems are the one-to-one systems containing whiteboarding capabilities.

Ideas for Using Videoconferencing in the Classroom

Clearly, videoconferencing has a place in distance education. However, in addition to using it for training, today's businesses are using it to communicate one-to-one as well as in meetings. While few schools now have this technology, there are ways to integrate it in both business communication and business education classes. One alternative to purchasing the technology is to arrange with

local businesses to use their systems; another alternative is to purchase a couple of hours from Kinko's¹ or any other local vendor. Perhaps the ideas presented below and others fine-tuned to specific schools and communities will help justify purchasing this technology.

Business Communication

Since business is using videoconferencing for one-to-one and group communication, it should be integrated in those ways into the business communication classroom. Some appropriate uses for one-to-one assignments are creating, revising, and polishing short reports--reports appropriate for its use and long enough to give students a good experience with the technology. Another appropriate experience may be to use it as a planning tool to create an agenda for a meeting or an information-gathering tool to collect expertise from those at remote sites. Videoconferencing could also be integrated into a graphics assignment, using the technology to create an appropriate graph to supplement a text. Or teachers could present the graphic and require the students to write interpretations. Students' real and appropriate needs could be used in ways such as assigning them to write the minutes from a student organization's meeting.

With the technology available for larger groups, teachers can give a variety of assignments. For example, a planning meeting could be assigned for perhaps discussing the year's activities of a particular student club. Or students could use it to plan strategies for recruiting more members to their student club. In addition to these activities, videoconferencing can also be used to announce new products or new business practices. Teachers might suggest that a favorite business of the students has decided to franchise, expanding to 100 sites nationally within the next five years. In choosing examples, it is important to select topics that are truly interactive to give students experience with the technology's two-way interactive capabilities.

Other Business Education Courses

Videoconferencing can be used effectively in business education courses. Accounting students could use it to create audit reports. Computer applications students might use it to practice using the revising features of word processors interactively. And with a connection to a business person at a remote site, they could help local arts, charities, and small businesses solve real problems with spreadsheets and databases. Introduction to business or economics classes might

¹Kinko's has videoconferencing systems set up in over 100 sites across the country. Fees currently range from \$150 per hour for a single site-to-site connection to \$210-\$240 per hour, per site when multiple sites are involved.

use the group feature to conduct planning meetings with groups of city officials or volunteer groups. Together they could plan book drives for local libraries, plan a city clean up, or arrange for tree planting. Keyboarding classes might use it to exchange ideas with various business people about the importance of keyboarding skills.

Different Time/Same Place

The electronic communication tools that fit this cell of the time/place matrix are those one would use to communicate with someone at different times but in the same place. In an electronic communication environment, place is broadly defined to include both the physical place and virtual space (Khoshafian, p. 45). One tool in this cell that represents a physical space tool is the kiosk. It stays in the same physical place, and users go to it at different times. An example of a virtual space tool is the electronic bulletin board system. It stays in the same virtual space, an electronic address, and users access it at different times. The electronic communication tools discussed here are used primarily in this time/place mode, although some could be used in more than one mode.

Work Group Computing

The primary work group computing tool used for different time/same place communication is Lotus Notes. Notes is a network tool designed to promote collaborative communication, running on multiple platforms. While other tools such as some of the electronic meeting tools can be used this way, Notes is currently the dominant tool in this category.² It offers users a place where information can be secure yet available to others on demand. Notes is a combination technology, one that has security, communication, document database, and application development features. Users can set up folders for team projects, client information, employee information, and any others needed. Mobile workers can use it to gather and deposit information for use by others in the company, providing fingertip access to details. Another feature of Notes is its replication technology. It can capture information at single points rather than multiple points, ensuring better accuracy. And its application development features allow users to quickly prototype and create customized applications.

Many benefits have been attributed to Notes. Some have used it as a planning tool, letting distributed groups work together through common folders. These groups have access to the same set of shared information as well as to each other.

²Two companies, Netscape and Digital, have made product announcements for networked collaborative workgroup tools. They are included on page 29 of this document.

It is also attributed with compressing time needed for tasks, particularly application development tasks. Sales representatives say it helps them serve their clients better by enhancing relations and providing a competitive edge over those without it. Overall, it improves the quality of everyday business processes as well.

Some drawbacks exist, drawbacks that impact how educators might use it in the classroom. While a few have reported that it is difficult to learn, the primary drawback most affecting educators is cost: the initial purchase and setup costs, the hardware and maintenance costs, and the technical support costs.

Ideas for Using Work Group Computing in the Classroom

Business education has always been both **for** and **about** business. The **about** side can readily be integrated with Notes. Have students read articles and give oral reports on the newest versions of Notes and any competitors it might have in the future. The teacher can show them the short video available from Lotus titled *Discover Lotus Notes: The Fastest Way to a Responsive Organization*. Use it as a starting point for discussing how accountants, computer analysts, marketing representatives, etc. might use the technology in performing their jobs. Or discuss the use of it to give companies a specific industry competitive advantage.

To integrate the **for** side in your classes, one may need to go to a site where Notes is installed for some hands-on experience. In some cases, the teacher may want to schedule visits to the business during non-business hours. Or perhaps one can demonstrate it from the classroom by connecting to a local firm using it, involving someone from the firm to illustrate its features and discuss how the business uses it. In any case, integrating Notes use into classes will take careful planning.

Word Processing/Electronic Document Publishing

Word processing and other forms of electronic publishing programs produce output that can be found at the same place at different times. For example, word processing can be used to create a print or a digital document. Whether stored on paper or on disk, the message is in the same place. New versions of word processors often include revision features, allowing two users to write and revise shared digital documents using these features to support their work. Also, writers can use new Internet publishing features of the major word processing programs or new software dedicated to creating HTML(hypertext markup language) documents. HTML format allows users to post documents for viewing by web browsers, browsers used in viewing many Internet documents.

With programs such as Web-It, Web Assist, and others that are readily downloadable from the web, anyone can create and distribute his or her own writing to potentially millions of people. In fact, Trinity College publishes its

student newspaper on the web (<http://www.trincoll.edu/homepage.html>). Another kind of electronic document is one prepared in portable document format (PDF), a format that is platform independent. The documents created with Acrobat, Envoy, and others can now be seen with viewers distributed for free. These viewers allow users to annotate, highlight, and bookmark the document, but not alter it. Some companies selling web browsers have already announced they will incorporate helper applications for this portable document format in their products. Therefore, more documents in this format will probably appear on the Internet.

Ideas for Using Word Processing/Electronic Document Publishing in the Classroom

Word processing is a primary use of computing technology today. People of all ages and backgrounds use it to communicate electronically, creating digital documents. New formats of electronic documents can be created with this tool and with other specialty tools. These tools produce documents that can be stored and accessed from the same place at different times. They can be used to enhance the learning process in both business communication and other business education courses.

Business Communication

Business communication courses can use this category of technology to teach about the tools that can assist the writer and to teach appropriate use of them in both the basic business communication course and the report writing course. When discussing the format of a business letter in the basic course, teachers could both demonstrate and require that students use particular templates in their word processing programs. If students have taken a word processing course that covers templates, teachers could ask them to modify a default template or create a new one customized for the company sending the letter. As classes move toward more student-centered structures, working in small groups will be common. A new capability often not covered in word processing classes that is useful to writers collaborating in small groups is the revision feature. Teachers could both demonstrate its use and require that students use it on group writing projects assigned.

Another useful feature of word processing software is its ability to import graphics. Teachers could require that student assignments include a graphic that is imported or posted electronically rather than physically pasted. Another assignment that would be extremely useful is to have students create a home page in HTML to post to the Internet. This page would supplement the resumes they prepare in the basic communication course. Another possible assignment is to ask

students to prepare a one-page letter in PDF in order to exchange it with others for peer critiquing, perhaps even for teacher critiquing.

Report writing classes can integrate this technology effectively, too. Teachers could demonstrate and require use of the report templates included with word processors. They could also demonstrate and require use of the table of contents and index generators, especially useful in long reports. Two types of other report assignments that could benefit from PDF are policy statements and proposals, documents that could be viewed and annotated by others. And when individuals collaborate with a corporate attorney or someone sensitive to the choice of words on a document such as a personnel evaluation, the revision features could be used.

These tools are important to business communicators for they help people communicate electronically in an appropriate format to others at different times in the same physical or virtual space.

Business Education

Business education courses can integrate this technology effectively in a variety of assignments. Accounting classes might require that student groups create a home page suitable for clients to access. The teacher could require that it include information for personal financial assistance, including links to sites where clients can download financial programs. Sophisticated students might even be able to include an executable program such as one that computes interest received or paid. For a simpler assignment, the teacher could require that students use letter templates to create the client letter assignments. A capstone assignment for computer applications students could require them to combine their knowledge of word processing, spreadsheets, and database. They would combine these skills to create a newsletter on a topic that interests them using the newsletter template included in word processing programs.

Another assignment for advanced students might be to create a home page with HTML to link to useful add-on programs for the core programs they have learned in the applications course. In introduction to business courses, the teacher could require weekly summaries of related news events be prepared with word processing software. And as with other courses, teachers could ask students to create a home page with HTML with links to sites relating to all topics in the course. The building of this site throughout the course would serve as an excellent reference for all students perhaps even after they leave class.

Keyboarding classes would probably be using the most basic features of these tools. However, a teacher could use a word processing program to create business letters and memos and illustrate the advantages and disadvantages of spellcheck as well as how to use it when creating documents for business. Economics classes could use word processing programs to create macros or templates for periodic

reports with a lot of constant information. If teachers are trying to get the business community to interact with students, they might ask them to give students feedback on reports they create. One way to do this would be to have the students create the reports in PDF so business people could read and annotate them with viewers.

Bulletin Board Systems/Usenet Newsgroups

Another tool that allows individuals to communicate at different times to the same place is the bulletin board system (BBS). BBSs provide a place to post messages for others to see. These systems are designed as storage areas for posting messages in categories. They are usually user-friendly programs that have some limited ability to organize content. BBS software can be run on personal computers, mainframes, networks, and linked networks including the Internet. One form of bulletin board system that runs on the Internet is Usenet newsgroups. These groups are organized by subject. One place to find an interactive search tool for locating them is available on the World Wide Web at <http://www.cen.uiuc.edu/cgi-bin/find-news>.

One study that looked at the impact of networks and bulletin boards found learning occurred indirectly by providing unique opportunities and directly by presenting guided instruction in tasks that require higher-order thinking skills (Steinberg, 1992). Integrating these different time/same place tools in the classroom has the potential to enhance learning.

Ideas for Using Bulletin Board Systems/Usenet Newsgroups in the Classroom

Bulletin board systems can be integrated easily into all business education courses; the ideas mentioned here apply to both business communication and other business education courses. At the beginning of a class, the teacher can introduce students to use of the bulletin board by requiring them to post a brief biography of themselves on the system. This helps students get acquainted with the system and with each other. The teacher might want to post a brief autobiography, too. One category for inclusion is class announcements. Here the teacher would post announcements and reminders. The teacher might want to post other announcements, too. These could be announcements for jobs, school events, special television programs, and perhaps community events of interest to students. Categories could be set up for each topic covered in class. Lecture outlines and lists of interesting supplemental articles or books could be posted. A teacher might use this area for comments received.

A category area for posting class assignments is a good idea. Students can check it to verify an assignment given in class; others can use it to get the assignment they might have missed. Teachers can use it to post new assignments

as well as archive old ones. Separate areas can exist for chatting and discussing the exam. Chat could be used among students and, not necessarily be limited to the topics covered in class. The discussion areas could be used by both the students and teacher to address exam concerns. The teacher might also want to set up categories for online experts. Students could pose questions or make statements for the experts to converse with them. A teacher may find this is an excellent way to get community business leaders involved with class topics since these business people can connect to the bulletin board system or newsgroup at times convenient for them. It gives students direct access to experts they might not otherwise contact. Also, this type of communication empowers shy students to participate more fully in class activities.

Kiosks

Kiosks are computer terminals that present and collect information. While early model ATMs were connected to mainframe computers, some early model kiosks were operated by stand-alone computers. Most of these early systems were text based. Today's kiosks can be connected to networks as well as mainframes, enabling them to update prices and information on all kiosks in a timely manner. Additionally, they include photographs, animations, multiple audio tracks, and even full-motion video. Most screens on today's kiosks are user friendly, enabling untrained users to easily work their way through a series of screens. Also, today's kiosk screen designers recognize the importance of putting manageable chunks of information on screens, being careful not to burden users with too much information or a busy-looking screen.

Kiosks allow users to access them at different times and find them in a known or expected physical place. A variety of businesses have used these systems and reaped many advantages from them. In Illinois, the Department of Employment Security installed kiosks to collect client data. It took counselors 40 minutes to collect the data, but clients using kiosks could enter the same information in 35 minutes. This system also reduced errors by removing the human conduit to the system and relieved the staff members of about 30 percent of their paperwork tasks, enabling them to devote more time to helping clients find jobs (Corcoran, 1994). Other benefits often cited from kiosks include opening new markets and providing better customer service.

Some industries are already using them extensively; more will likely follow as kiosks' payback times shorten. The financial services industry uses this technology to let users gather information about such services as loans, savings plans, and retirement plans. The real estate industry has also embraced this technology; in some areas, kiosks with local real estate listings are in malls and

stores. The travel industry also uses kiosks, giving customers information on airline flights, restaurants and hotels. A few airlines even use this technology for issuing tickets or making reservations. Cities have embraced kiosks for informing visitors about local attractions and their locations. Another developing industry is the online catalog industry, enabling the user to select merchandise that will be mailed later. One paper reported the use of kiosk technology for presenting a multimedia instructional package using Hypercard and Quicktime. It was designed to allow for discussion and learning as well as educational assessment. Its major conclusion was that the kiosk was an appropriate medium for collaborative discourse and reflection (Hsi, 1994). Some businesses, too, are beginning to seriously consider using this technology for training.

Ideas for Using Kiosks in the Classroom

While integrating the use of kiosks in the classroom is a bit unusual, it is an electronic communication tool that can serve both instructional needs and students' personal needs. As an instructional tool, teachers can use it to collect feedback from students on such issues as curriculum, learning environment, instructional delivery quality, and new course proposals. A feedback form dedicated to collecting student opinions could reside on a computer located in the student computer lab where students could access it when convenient for them. Since kiosks are interactive, they can be set up for tutoring with feedback, prerequisite screening, and even testing. These instructional uses can work in all business education courses.

Kiosks can also be developed for and by students to serve their needs. For example, a bookstore kiosk might provide a map of the bookstore, a listing of student events including ticket order capabilities, a catalog of school logo clothing and accessories, a listing of books available—both textbooks and general interest books, and a listing of music with samplings. A library kiosk might include a library map, a collection of course syllabi, a listing of library services, a schedule of classes with time and location. A student center kiosk might include the agendas for student government and student organization meetings, and a listing of services of nearby merchants.

These kiosks could be created by students in both marketing and business communication classes. Additionally, teachers could incorporate their use in assignments where students write proposals to school officials to install the kiosks as well as sales letters to nearby merchants soliciting their financial support in exchange for being included on the kiosk. Student teams could be asked to present oral persuasive presentations to those involved in deciding where to place the kiosks.

Different Time/Different Place

The electronic communication tools that fit this cell of the time/place matrix are those one would use to communicate with others at different times and in different places. As in other categories, some of these tools may seem to overlap other areas. One fine distinction is the receiver of the communication. If the sender transmits a message electronically to particular receivers who will be receiving the message at a different time and in a different place, the tool clearly belongs in this cell. E-mail, listservs, and hyper/multi-media tools are examples. They are placed in this category because of their primary use. On the other hand, bulletin boards and newsgroups have an intended destination for the communication as a place first in the hope that a targeted group of readers will view the message. The receivers of these messages must go to a particular place to read them. Therefore, these tools are best placed in the different time/same place category.

Different time/different place communication tools are clearly the most flexible electronic tools, giving them a unique advantage. However, they also provide the sender with much less immediate feedback than same time and same place tools provide. When users choose these tools to communicate their messages, they should understand the strengths and drawbacks as well as how to use the technology.

E-mail/Listservs

The use of electronic mail has grown phenomenally in this decade. Both private companies and the government have espoused the use of e-mail. Electronic mail is simply a message transmitted digitally over a network to single or multiple receivers. It provides a speedy channel for both internal and external communication. Companies have found the training costs low relative to other programs. And users of all ages are using it daily to communicate with others for both personal and professional uses. In fact, some people have several e-mail addresses, and it is almost a must to include an e-mail address on one's business card. Clearly, e-mail has grown from being just another communication tool to an important tool in most businesses.

A recent study of graduate students and business people reported many purposes for e-mail including exchanging information, asking questions, exchanging opinions, staying in touch, generating ideas, making decisions, exchanging confidential information, resolving disagreements, getting to know someone, and bargaining/negotiating (Bruning, 1994).

As with any tool, there are both benefits and drawbacks. Among e-mail's most important benefits are its low cost and speed. It breaks time and distance barriers for those doing business coast to coast or globally. Some companies have

even used it for competitive advantage by passing projects around the world, enabling them to work on projects 24 hours a day. By shortening cycle times on projects, they gain advantage over other competing companies. E-mail also tends to flatten organizational structures, eliminating the need for a "middleman" to act as a conduit for information. Also, e-mail encourages not only vertical interactivity but also horizontal interactivity across departmental lines. And one of its often-cited benefits is the reduction in telephone interruptions since users can check their e-mail at convenient times. Finally, it gives workers more flexibility for working remotely from home and other locations (Angell and Heslop, 1994).

But the technology also has some drawbacks. For example, while it does provide a record of a communication exchange, the words sent can be forwarded and manipulated. Furthermore, since the environment of the technology encourages messages written on the fly, the hurried words may sometimes come back to haunt the user. One must be exceedingly careful not to send defamatory messages, too. Courts have ruled that since the company provides the technology, the messages belong to the company and can be viewed by management. Furthermore, messages writers think they have deleted can often be retrieved from the system. Government officials have been caught for wrongdoings this way, and one private company was recently fined hundreds of thousands of dollars for something in an electronic written message that the writer thought had been deleted.

Using the technology also requires that one be mindful of appropriate manners and sensitive to internal politics. Of course, most writers know better than to flame others. However, sometimes with messages written quickly, writers fail to censor their emotions appropriately. Not only does one need to avoid flaming in one-to-one messages, but also especially avoid it on bulletin boards and forums for all to see. Choose words with great care. Be careful not to write anything one might want to recant. Also, keying in all caps is considered SHOUTING. Avoid it except when one really needs it for emphasis. In addition to being sensitive to others' reaction to the written word, writers need to be sensitive to their screen width, too. Use short lines and short paragraphs for easier reading. Finally, do not use e-mail when it is an inappropriate medium for the task at hand. It is usually appropriate for routine information and some special announcements.

When using e-mail, one needs to pay attention to a few special topics that are unique to this medium. First, take care to send it only to those who really need it. While receiving electronic junk mail probably is not as wasteful as print junk mail, it is still distracting. Just because it is extremely easy to send a message to a long list, it is both considerate and economical to send it only to those who need it. Second, make the subject line clear. It should clearly tell the reader the nature and urgency of the message. While some systems let one mark the message's priority,

most readers will be guided by the subject line. In addition to using short lines and short paragraphs to improve readability, use the journalistic style of ordering the items in descending order of importance. Since most readers will read one or two screens readily, the most important points will be read. However, if the message extends beyond the readers' desire to read from the screen, some of it may be lost. If the message is particularly long, an introduction tells the reader what follows. Also the use of subheads throughout the document will help the reader see where the writer is going. Third, the signature line should always be included but should be short as a matter of courtesy. If one attaches a file, be sure to let the reader know the format and size of it. Finally, do check spelling and mechanics. Newer e-mail programs contain a spell checking utility, so it should be used. While many users "forgive" spelling errors, these errors do get noticed.

In listservs, operated through e-mail, errors get noticed by many. Since listservs are a way for many people to communicate with many others, messages sent to them go to everyone on the list. To join a listserv, one simply sends a subscribe message to the list including first and last name. The listserv returns a confirmation that usually tells one how to unsubscribe, so save this information. One may want to join a listserv for a while to see if it is interesting. Listservs are available for myriads of topics ranging from professional subjects to personal hobbies to current events. When one checks his or her e-mail, one will get messages from everyone who sent a message to the list since the mail was last checked. Some lists are extremely active, some have active cycles, and some fade for lack of participation and interest.

Using both e-mail and listservs in the classroom can definitely add a dimension not often obtained any other way.

Ideas for Using E-mail/Listservs in the Classroom

Before e-mail and listservs can be added to classroom activities, students need to have e-mail accounts. If the school does not provide these for students, many private companies offer them. Some large universities have moved their student e-mail/Internet accounts off-campus, negotiating affordable rates for their students. The effort to get all students e-mail accounts is well worth the new dimension e-mail and listserv use will add to classes. And this new dimension takes very little class time to cover. Teachers and students will find these activities add a delightfully entertaining and educational value to courses.

Business Communication

Adding e-mail and listserv use to a business communication course can improve the instruction and expand the content. During the coverage of letters refusing requests, e-mail can be used as an instructional tool to send students an

angry claim letter—one that might evoke their emotions. They should be instructed to deny the request. This will give them practice in restraining from composing a message on the fly. For this and other letter writing assignments where the writing is less than one page, arrange to have students' letters critiqued by students from another school. Some experience has shown students will critique carefully and honestly without fearing a face-to-face confrontation with someone (Steinberg, 1992). To enhance the content in a way a textbook cannot when covering cross-cultural communication, have students exchange e-mail with students from other cultures. Encourage them to be polite while inquiring about the unique values, behaviors, and business practices of their contact's country. Another way to enhance the course in the area of basic grammar skills and add interest to an otherwise dull topic is to assign students various listservs to monitor. Choose listservs where participants are extremely articulate and those where they are not. Ask students to critique the conversations as well as report their reactions to the language use. These examples illustrate some of the unusual potential these electronic communication tools have for use in the business communication course.

Other Business Education Courses

Other business education courses, too, can benefit from the integration of e-mail and listservs. Accounting students could alternate monitoring stints on a variety of listservs, forwarding with e-mail to the rest of the class the most interesting or thought-provoking messages. When all students have e-mail accounts, have them exchange e-mail about accounting careers with recent graduates working in accounting positions.

E-mail could also be used by computer applications students for exchanging their assignments for peer critique, attaching their work to the e-mail messages. Another activity for computer applications could have students subscribe to a listserv specific to a program they use in class. Encourage students to give suggestions to those on the listserv as well as to ask questions.

Even keyboarding students could benefit from listservs. By encouraging them to subscribe to and participate in a listserv that discusses a personal interest topic, they will be gaining practice in composing at the keyboard. Keyboarding teachers can give students practice using e-mail by asking them to send regular updates on their goals and progress in the class.

In the introduction to business course, teachers could assign various listservs that relate to your course topics and have students lurk. Even just lurking gives them good background information and examples they can use to discuss the principles being covered. Another assignment that will give them both background information and critical thinking skills is required reading from general business publications such as *BusinessWeek*, *Fortune*, *Forbes*, *Inc.* and

others. After students read articles they choose from those publications, require them to send an e-mail reactive response to the editor.

Marketing students can use e-mail to practice their persuasive writing, sending a message to members of a student organization encouraging them to attend an upcoming meeting. They could use listservs for ideas for marketing a variety of products and services, incorporating some of what they learn in an assigned report.

Hypermedia/Multimedia

Multimedia is generally referred to as combining more than one form of communication. One could combine any mixture of audio, video, animation, text, and graphics in a single digital presentation to theoretically qualify as multimedia. In fact, today it almost seems as though everything is multimedia. Sometimes it is called hypermedia, which is an enhanced version of multimedia. Hypermedia is multimedia combined with hypertext technology. This technology is one where links can be created in presentations. The user simply clicks on the link, often a button, to navigate through material following any path the user chooses.

As interest has grown for both business and education, the term is highly hyped. A single 5-inch CD-ROM disk can hold nearly 250,000 pages of text or a combination of various kinds of files, enabling the development of products to serve business and education markets. Major companies such as Microsoft and Disney entered the market early. Also, publishers such as Houghton Mifflin, Random House, and others have found markets for reference books and how-to books. Additionally, this technology has spawned a cottage industry for many small companies developing single products or customized products.

As the cost of the hardware drops, the use of hypermedia is becoming a routine part of many classrooms. While some products on the market fit classroom curriculum, some authoring programs are also available that enable classroom teachers to create customized hypermedia/multimedia material. Although this can be very time consuming, teachers report that they thoroughly learn the material and create content focused clearly on the objectives they wish to accomplish.

Hypermedia/multimedia presentations have many benefits that meet highly touted characteristics of good instructional design. Interactivity is one primary benefit. While the material could be designed to elicit reactive, interactive, or proactive types of responses, interactivity is learning by doing, by being active rather than passive. Hypermedia can also be very motivating because it can induce all kinds of novelty. Furthermore, it can provide learning relevant to the users' learning style, attitude, and maturity level. It can also provide both enriching and remedial learning.

Some research has been conducted into the effect of hypermedia on students with different learning styles as well as on some of the features of hypermedia used

by those with different learning styles. One of the most supportive studies looked at field independent, field mixed, and field dependent learning styles of students and analyzed the use of a hypermedia program on vocabulary building. The authors found significant differences in the ways students with these different learning styles used the program. However, the students were able to achieve the same results (Liu and Reed, 1994). While further research is needed, this study has implications for curriculum.

Ideas for Using Hypermedia/Multimedia in the Classroom

Hypermedia/multimedia is a powerful tool that gives individuals an opportunity to choose the appropriate media for a task from an even larger set of tools. To use and/or create it will require access to the appropriate hardware and software. But integration of its use into the classroom has the potential to provide benefits for both instruction and learning.

Business Communication

For instructional purposes, teachers will either create their own customized hypermedia documents or select from a rapidly expanding list of those developed commercially. In business communication courses, a teacher might create hypermedia for spelling and grammar use. By using the lowest levels of reactive interaction, one will be turning students into active learners rather than passive ones. The hypermedia document could enable them to follow threads through the material that enable them to select those topics they most need to review. The teacher could also select a complex topic for a hypermedia document, a topic such as cross-cultural communication. The topic lends itself readily to video and sound clips illustrating different business practices.

Another type of hypermedia that could enhance the business communication class immensely is a fully developed hypermedia case. The case could present real business scenarios, with real business support material including files from a variety of programs. For example, it might include an answering machine sound clip from a client or a potential customer requesting information. It could show an angry confrontation with a boss or customer. Its in-box could include a variety of documents, clear ones as well as totally disorganized and unclear ones. The in-box documents could be e-mail as well as print documents.

Hypermedia provides the potential for developing extremely enriching cases; however, a large block of time must be allocated to it. Soon publishers, as well as other business educators, will be making these hypermedia cases available. The teacher's time will then involve reviewing and selecting the most appropriate ones for students.

Teachers can also use hypermedia technology as a tool for students to employ some assignments that might lend themselves readily to hypermedia use. These include letters integrating sound and graphics, resumes integrating photos, illustrations of work, and maybe even sound or animation.

Other Business Education Courses

Hypermedia can be used similarly in other business education courses. Some teacher-created or teacher-selected subjects for hypermedia might include an interactive tax preparation case for accounting students, a hypermedia document on data collection or data interpretation for marketing students, a document that helps students learn to create surveys and choose appropriate statistics to analyze the data collected for marketing students, and documents that help introduction to business students understand how the real marketplace works. All these topics lend themselves readily to the integration of a variety of digital files.

Students in other business education classes can also create hypermedia documents appropriate for the subject being studied. Marketing students might create hypermedia sales brochures for products or services they select or ones they are studying. Also, marketing students might create an interactive survey form for collecting data. And as a capstone assignment, computer application students might use hypermedia to create documents such as newsletter or short report that combine all the computer applications they have learned thus far.

Conclusion

This time/place framework for electronic communication tools should enable teachers to organize the present set of tools as well as new technologies that enhance various aspects of the communication process. As one categorizes tools, one will feel more comfortable with their use. As teachers see the value of technology, they will be able to give it a real and appropriate presence in courses. Students will then be prepared to learn these technologies and to use them properly.

The teacher's comfort level with new technology will ease the negative aspect of change these technologies will inevitably bring. The teachers will be confident in their knowledge of technology and transfer to students an attitude that will help them adapt to future changes in technology, too.

The Future of Electronic Communication

Will you see tomorrow's electronic communication technology change your life? Will you see a new global culture? Will you see schools change? Will you wear your computer?

You will. AT&T says you will. Other industry leaders and futurists have their versions of tomorrow's communications tools, too. Neil Postman, Chair of New York's University's Department of Culture and Communication in the School of Education, hopes we don't use technologies to replace our sense of community. While he sees value in it for the handicapped or for those who need to gather or share information, he fears services such as online banking, shopping, and voting will destroy our sense of community (Eyle, 1995).

Columnist Michael Wolff predicts the Internet will change our lives in a different way. He thinks it will be similar to the changes introduced by the library or the telegraph and bigger and better than the change introduced by television. The Internet's ability to be borderless will bring a sense of empowerment to us. It will change how we act, how we do business, and even how we engage in relationships. He predicts it will change world culture (Wolff, 1995). But it is people who communicate; it is people who will determine which technologies will be accepted tomorrow and how they will be used.

Companies today must walk a fine line in bringing products to market. Their products must be innovative while serving perceived needs or purposes. A number of new technologies have been predicted for the input, processing, and output stages of the communication cycle. Microtek President S. C. Lee predicts that within five years scanners will be used like today's keyboards to become an essential tool of communication (Siner, "Scanning," 1995). Other common input tools on tomorrow's office computers will be cameras and microphones. In fact, futurist Paul Saffo, a researcher at the Institute for the Future in Menlo Park, California, believes digital video will become so dominant that e-mail as text will die. He believes text will be used merely as an annotation tool. This technological change will be spurred by rapid cost drops (Markoff, 1994). Another technology affecting input is Intelligent Agents. This software tool is talked about often by leaders of industry giants AT&T, Microsoft, and others. It is a filtering tool, helping to sort the vast amount of information that regularly inundates us (Barker, 1994).

The major technology affecting the processing of electronic communication is the Internet. As we move toward more connectedness, we will use products or desktop peripherals developed for use with web browsers. One of these technologies is a program called HotJava. It and others allow transmission of executable programs to any computer connected to the Internet. They are also secure and can be run in real time (Gilder, 1995). In addition, two companies have recently announced intentions to create Notes-like products for collaboration to be run on the web with browsers. Netscape recently acquired Collabra Software and intends to integrate its products to create interactive groupware environments (Wingfield, "Netscape," 1995). And Digital has also announced a workgroup application for collaboration activities using web servers (Wingfield, "Digital," 1995). The Internet will clearly be a vehicle for changing electronic communication.

Communication will also be changed by technologies affecting output. One of these is the flat panel display. This technology promises to provide power savings and to reduce radiation emissions while improving the quality of images (Siner, "Display," 1995). Another upcoming change in output is recordable CD technology. One company, Pinnacle Micro, predicts it will replace CD-ROM technology within five to ten years (Fryer, 1995). The wider use of color is another change in output. Over the next five years the use of color will move out of its niche environments and into much broader use (Hendricks, 1995).

Finally, a technology that is predicted to be in widespread use within just five years is two-way paging. The product will dominate the current pager market, (Noer, 1995) and extend the market to everyone (Meeks, 1995). We are expected to become as addicted to these as we are to answering machines and e-mail since we have a deep need to communicate.

While having whiz-bang technology is great, how we actually use it will determine how it affects our lives. Many predictions have been made on how it will affect our communication in the workplace and in education. Of course, the biggest workplace change in the decade ahead is said to be the creation of the virtual office. Digital technologies for both audio and video make the virtual workplace possible. This virtual workplace extends to anywhere on earth, enabling companies to hire employees located beyond its physical location as well as beyond its borders (Willis, 1995). In addition to this macro change, there also will be micro changes in communication. One of the most notable will be the dramatic increased use of images in documents. Pictures will become even more effective in communicating our messages clearly (Siner, "Scanning," 1995).

Education will be affected in both macro and micro ways, too, in its use of technology for educational purposes. As the need for continuing, lifelong learning grows, technology can be used to serve these expanding markets. One macro way, of course, is through offering courses and degrees online. Some schools are already doing this, but many more will enter this market (Barker, "A Technological," 1994). In fact, one futurist, William Wulf, questions the need for the university as a place. He argues both sides of this question. If it serves as a way to certify the competence of its graduates, it may remain. If technology serves to expand and empower schools, they may merge to eliminate redundancies and serve specialized needs better. While remote scholarship probably will not replace face-to-face education, it will provide an option for getting an education. Another macro change in education will be the function of libraries. Instead of serving as repositories of information, they will serve as facilitators for the retrieval and dissemination of information (Wulf, 1995).

On a micro level, technology will impact education with both its products and uses. One use will be toward creating more learner-centric environments. According to John Sculley, all new technologies will be more supportive of this environment. It will enable the learner to be in control of the learning process,

integrating entertainment even more (Anonymous, "Building Blocks," 1995). Even textbooks will be more entertaining. Electronic or hypertext textbooks will integrate video, audio, animation, text, and graphics. Students will be able to interact with parts of the text as well as annotate it while following learner-chosen paths through the text (Wulf, 1995). Their learning will be individually tailored to fit their learning styles and behaviors.

Electronic communication tomorrow is likely to offer more options. How these options are adopted and used will affect to what extent technologies change our lives. Will you feel technology has enhanced the quality of your life? You will. Will you be able to adapt to these changes? You will.

Glossary

Definitions for some of the terms and acronyms frequently used in electronic communication are presented here. They represent the meanings used in this document. For further elaboration, one may want to consult an up-to-date computer dictionary.

Authoring In multimedia, the process of preparing a presentation. This involves not only writing the text, but also preparing the sound, graphics, and video components.

Bulletin Board Systems (BBS) A telecommunications utility, usually set up by a personal computer hobbyist for the enjoyment of other hobbyists.

Collaborative Writing Writing a document with more than one person.

Compiling Reading program statements written in a human-readable programming language into a machine-readable, executable program.

Different Time/Different Place The sender and receiver of the message communicate at different times and in different places.

Different Time/Same Place The sender and receiver of the message communicate at different times but in the same physical or virtual space.

Document Sharing Two or more computer systems share the same document at the same time.

E-mail The use of a network to send and receive messages.

Electronic Document Processing A form of document designed for multiple platforms.

Electronic Meeting Systems (EMS) Software designed to facilitate same time group meetings, primarily face-to-face meetings with some extensions to distributed meetings.

Flame In Usenet and e-mail, a message that contains abusive, threatening, obscene, or inflammatory language.

Flashing A flash is similar to a flood except that it is a program that forces compiling, causing delays in using the system.

Flooding Typing something over and over again and posting to a mailing list or newsgroup.

HTML (hypertext markup language) The set of conventions for marking the portions of a document so that, when accessed by a program called a parser, each portion appears with a distinctive format. It is the markup language behind the appearance of documents on the World Wide Web.

Hypermedia A hypertext system that employs multimedia resources (graphics, videos, animations, and sounds). The best hypermedia systems employ various media in ways that are more than just "window dressing," but materially support the presentation's objective.

Interactivity A method for allowing the computer and the user to exchange input for processing information.

Internet Relay Chat (IRC) A real-time, Internet-based chat service, in which one can find "live" participants from the world over.

Kiosk A publicly accessible computer system that has been set up to allow interactive information browsing. In a kiosk, the computer's operating system has been hidden from view, and the program runs in a full-screen mode, which provides a few simple tools for navigation.

Links A connection between two files or data items so that a change in one is reflected by a change in the second.

LISTSERVS A commercial mailing list manager that runs on UNIX and Windows.

Lurk To read a newsgroup or mailing list without ever posting a message.

Multimedia A computer-based method of presenting information by using more than one medium of communication, such as text, graphics and sound, and emphasizing interactivity.

Network A communications and data exchange system created by physically connecting two or more computers with network interface cards and cables, and running a network operating system.

Platform Independence The capability of a local area network to connect computers by different makers, such as connecting an IBM PC-compatible computer with a Macintosh computer.

Portable Document Format (PDF) A richly formatted document, which may contain graphics as well as text, that can be transferred to another type of computer system without losing the rich formations. To create portable documents, you need portable document software such as Acrobat or Envoy.

Presentation Software An application program designed to create and enhance charts and graphs so that they are visually appealing and easily understood by an audience.

Real Time The immediate processing of input, such as point-of-sale transaction or a measurement performed by an analog laboratory device. The computers used in your car are real-time systems.

Same Time/Different Place The sender and receiver of a message communicate at the same time but in different places.

Same Time/Same Place The sender and receiver of a message communicate at the same time and in the same place.

Search Tools Any program that locates needed information in a database, but especially an Internet-accessible search service that enables you to search for information on the Internet.

Threads In a Usenet newsgroup, a chain of postings on a single subject. Most newsreaders include a command that lets you follow the thread (that is, jump to the next message on the topic rather than display each message in sequence).

Usenet Newsgroups Within Usenet is a discussion group (newsgroup) on every conceivable topic and some you haven't thought of. Each newsgroup focuses on a particular subject. Usenet users can read and reply to posted messages.

Videoconferencing A conference held on a network that includes video along with text and graphics transmission.

Virtual Not real; a computer representation of something that is real.

Web Browser A program that runs on an Internet-connected computer and provides access to the riches of the World Wide Web. Browsers are of two kinds: text-only browsers and graphical web browsers that allow the user to see in-line images, fonts, and document layouts.

Whiteboard Conferencing Conferencing held online that allows document sharing.

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